

REMARKS

Claims 1-53 are pending in the case. The Office rejected claims 1, 2, 5, 38 and 46 as indefinite under 35 U.S.C. §112, ¶2 as indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Office also required restriction of the claims.

I. REMARKS ON CLAIM AMENDMENTS

Applicants note that the amendments to the claims made above are not made for purposes of patentability. Rather, they are made to streamline the wording of the claims and improve their readability. Applicants also note that the amendments do not narrow the scope of the claims. Indeed, the amendments have no effect on the scope.

II. ALL CLAIMS ARE DEFINITE

The Office rejected claims 1, 2, 5, 38 and 46 as indefinite under 35 U.S.C. §112, ¶2 as being allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The grounds were varied. Applicants therefore address each of them separately, *in seriatum*.

A. CLAIM 1—BREADTH IS NOT INDEFINITENESS

Claim 1 is rejected because the limitation “dynamic property” is “broad.” This is improper and directly violates Office policy:

2173.04 Breadth Is Not Indefiniteness

Breadth of a claim is not to be equated with indefiniteness. In re Miller, 441 F.2d 689, 169 USPQ 597 (CCPA 1971). If the scope of the subject matter embraced by the claims is clear, and if applicants have not otherwise indicated that they intend the invention to be of a scope different from that defined in the claims, then the claims comply with 35 U.S.C. 112, second paragraph.

Undue breadth of the claim may be addressed under different statutory provisions, depending on the reasons for concluding that the claim is too broad. If the claim is too broad because it does not

set forth that which applicants regard as their invention as evidenced by statements outside of the application as filed, a rejection under 35 U.S.C. 112, second paragraph, would be appropriate. If the claim is too broad because it is not supported by the original description or by an enabling disclosure, a rejection under 35 U.S.C. 112, first paragraph, would be appropriate. If the claim is too broad because it reads on the prior art, a rejection under either 35 U.S.C. 102 or 103 would be appropriate.

M.P.E.P. § 2173.04 (emphasis added).

Whether the Office thinks the language is broad is irrelevant. The test is “...whether the claim apprises one of ordinary skill in the art of its scope and, therefore, serves the notice function required by 35 U.S.C. 112, second paragraph, by providing clear warning to others as to what constitutes infringement of the patent.” M.P.E.P. §§2173, 2173.02. Office policy sets out a context in which this determination is made:

The essential inquiry pertaining to this requirement is whether the claims set out and circumscribe a particular subject matter with a reasonable degree of clarity and particularity. Definiteness of claim language must be analyzed, not in a vacuum, but in light of:

- (A) The content of the particular application disclosure;
- (B) The teachings of the prior art; and
- (C) The claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made.

M.P.E.P. § 2173.04. The Office has not cited a single one of these factors in the rejection. The Office has therefore arbitrarily and capriciously decided that the language is too broad for its liking and is now requiring—without justification—that Applicants provide a definition.

If the proper analysis is employed, the language is manifestly clear. The notion of “dynamic property” has an intuitive meaning of a property associated with the motion of the vehicle. The specification sharpens this intuitive meaning:

In unmanned ground vehicles (e.g., the vehicle 100 of FIGS. 1A-1C and the vehicle 1500 of FIGS. 15A-15B), as well as in other vehicles, it is often desirable to control the vehicle's stability so that a proper course may be held while traversing along a path, discrete obstacles may be overcome, and/or anomalies, such as roll-over, may be prevented. In one embodiment, the vehicle's stability may be controlled by determining at least one dynamic property of the vehicle (e.g., the inertia, acceleration, velocity,

momentum, and the like) and manipulating the articulated suspension based on the at least one dynamic property to affect the stability of the vehicle.

¶[0097] Thus, a “dynamic property” is one affecting the vehicle’s stability in motion. To further sharpen the meaning, the specification actually gives examples of what a dynamic property might be—namely, “the inertia, acceleration, velocity, momentum, and the like”. Furthermore, the structure of the claims reinforces the clarity of the term when claim 2 more particularly limits the “dynamic property” of claim 1 to one of the examples given in the specification.

The Office, on the other hand, cites no evidence and gives no reasoning to support its position that the limitation “dynamic property” is too broad. Aside from the fact this directly contravenes Office policy as a ground for rejection, the proper analysis set out in the M.P.E.P. reveals that the language is, in fact, definite. One skilled in the art can ascertain its meaning and, hence, the bounds of the claim. Applicants therefore request that this rejection be withdrawn.

B. CLAIM 2—“THE INERTIA” IS AN INHERENT PROPERTY

The Office alleges that the limitation “the inertia” in claim 2 lacks antecedent basis. In claim 2, “the inertia” is a property of the “vehicle” first recited in the preamble of claim 1, from which claim 2 depends. According to the courts and Office policy:

Inherent components of elements recited have antecedent basis in the recitation of the components themselves. For example, the limitation “the outer surface of said sphere” would not require an antecedent recitation that the sphere has an outer surface. *See Bose Corp. v. JBL, Inc.*, 274 F.3d 1354, 1359, 61 USPQ2d 1216, 1218-19 (Fed. Cir 2001) (holding that recitation of “an ellipse” provided antecedent basis for “an ellipse having a major diameter” because “[t]here can be no dispute that mathematically an inherent characteristic of an ellipse is a major diameter”).

M.P.E.P. §2173.05(e). Applicant respectfully submits that any vehicle possesses “inertia” as an inherent property of its existence, just as a sphere has an outer surface or an ellipse has a major diameter.

Accordingly, the limitation “the inertia” in claim 2 has its antecedent basis in the recitation of “a vehicle” in claim 1. M.P.E.P. §2173.05(e). Should the Office maintain that claim 2 is indefinite, Applicants request clarification of how any body might not possess

“inertia” as an inherent property. Applicants request that the rejection be withdrawn until such time.

C. CLAIM 5—THERE IS AN ANTECEDENT BASIS

The Office rejected claim 5 as lacking antecedent basis for the limitation “the at least one of the attitude.” The antecedent is clearly recited earlier in the claim. Claim 5, as amended above, is reproduced below with the subject limitation and its antecedent emphasized:

5. (Currently Amended) A method, according to claim 1, further comprising determining *an attitude or a location* of the vehicle, such that manipulating the articulated suspension comprises manipulating the articulated suspension based upon *the attitude or the location* of the vehicle.

Accordingly, Applicants request that the rejection be withdrawn.

D. CLAIMS 38, 46—THE STATE OF THE VEHICLE IS DEFINITE

Claims 38, 46 were rejected as “unclear” for the limitation “a state of the vehicle”, and the Office requested a definition. The question “...whether the claim appraises one of ordinary skill in the art of its scope and, therefore, serves the notice function required by 35 U.S.C. 112, second paragraph, by providing clear warning to others as to what constitutes infringement of the patent.” M.P.E.P. §§2173, 2173.02. As noted above, according to Office policy:

The essential inquiry pertaining to this requirement is whether the claims set out and circumscribe a particular subject matter with a reasonable degree of clarity and particularity. Definiteness of claim language must be analyzed, not in a vacuum, but in light of:

- (A) The content of the particular application disclosure;
- (B) The teachings of the prior art; and
- (C) The claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made.

M.P.E.P. § 2173.04. Again, the Office has not cited a single one of these factors in the rejection.

Applicant respectfully submits that any given object, including any vehicle”, has a “state” in which it exists. This is a fundamental fact of existence. Accordingly, those of ordinary skill in the art will be aware of this fact. The question then becomes if they will understand the

reference to the vehicle's state used in the claims. To assist those skilled in the art, the specification directly addresses this concept:

In real time, the predictive control model 1302 calculates the control commands (represented by block 1310) required to move the vehicle 100 to the desired attitude and location. The model calculates the CG and stability limits of *the vehicle 100 in its current state* and manipulates the wheel assemblies 102, active dampers (e.g., the rotary MR dampers 402), and any other articulable mass associated with the vehicle 100 to affect the CG and stability limits of the vehicle 100 to reach the desired location and attitude without unfavorable impacts such as a roll-over.

In the same way a skier shifts weight to his downhill ski to improve stability, the predictive control model 1302 dynamically articulates the wheel assemblies 102 (and/or other articulable masses of the vehicle 100) to place the vehicle in a more stable configuration, taking into account the vehicle's dynamic properties, CG, and stability limits, *to achieve the desired vehicle state*.

¶[0112]-¶[0113] (emphasis added)

Applicants respectfully submit that one of ordinary skill in the art would therefore have no difficulty understanding what is meant by the “state of the vehicle” when the proper analysis is employed. A vehicle inherently exists in a “state”, and the specification demonstrates how that term is used in the present context. On the other hand, the Office has yet to cite one fact or argument supporting its position. Accordingly, Applicants request that the rejections be withdrawn.

E. CLAIMS 3-13, 29-45, AND 47-53—AND THEIR DEPENDENCIES

The Office “objected” to claims 3-13, 29-45, and 47-53 “because of dependencies.” Applicants request clarification as to whether these claims are objected to or rejected, since they are made with the rejections discussed above. Applicants have reviewed the dependencies of the claims, and have amended a problem with the dependency of claim 8. However, Applicants do not see any problems with the dependencies of the other claims, and requests clarification as to where the Office believes the problem may lie.

III. RESPONSE TO RESTRICTION REQUIREMENT

For purposes of restriction, the Office grouped the claims as follows:

- Group I—claims 1-19, directed to a method for controlling the stability of a vehicle;
- Group II—claims 20-45 directed to a method and apparatus for controlling a vehicle's stability; and
- Group III—claims 46-53 directed to a vehicle having a sensors and a controller to control a vehicle's stability.

In response to the restriction requirement which the Examiner imposed, *Applicants elect, with traverse, to prosecute claims 1-19, i.e., the Group I claims*. Because Applicants have elected one of the groups and one of the species as defined by the Office and identified the claims therein, this paper is fully responsive to the restriction requirement.

A. APPLICANTS TRAVERSE THE RESTRICTION

Applicants traverse the restriction on three grounds, namely:

- the restriction requirement has not been properly made;
- there is no serious burden absent restriction; and
- the groups are so thoroughly linked there is no need for restriction.

Applicants address each of these grounds in turn.

1. The Restriction has NOT Been Properly Made

According to the M.P.E.P.:

There are two criteria for a proper requirement for restriction between patentably distinct inventions:

(A) The inventions must be independent (see **MPEP § 802.01, § 806.06, § 808.01**) or distinct as claimed (see **MPEP § 806.05 - § 806.05(j)**); and

(B) There would be a serious burden on the examiner if restriction is not required (see MPEP § 803.02, § 808, and § 808.02).

M.P.E.P. §803 (emphasis added).

The Office has failed to even allege that the absence of restriction would impose a “serious burden”. “For purposes of the initial requirement, a serious burden on the examiner may be *prima facie* shown by appropriate explanation of separate classification, or separate status in the art, or a different field of search as defined in **MPEP § 808.02.**” *Id.* The Office does allege separate classifications, but they are based on an improper characterization of the claims, as is discussed below regarding the improper grouping of the claims. It is therefore apparent that the requirement is improper on its face. *Id.* Accordingly, the requirement is improvident and should be withdrawn.

2. There is No “Serious Burden” Absent Restriction

According to Office policy regarding restriction, “[i]f the search and examination of all the claims in an application can be made without serious burden, the examiner must examine them on the merits, even though they include claims to independent or distinct inventions.” M.P.E.P. §803. As is established below, all the independent claims are linked, and so must be examined together. M.P.E.P. §809. There are other numerous linking claims among the dependent claims, as well. By the time all the linking claims are all examined with the elected claims, their will be little examination left. There consequently would be no “serious burden” caused by a lack of restriction if Office policy is correctly followed given that most of the burden will be borne even if the restriction is imposed.

3. Linking Claims are Present

Applicants respectfully submit that *all three groups are linked*. In the table set forth immediately below, Group I, represented by claim 1, is linked to Group II, represented by claim 20, demonstrates that Groups I and II are clearly linked. The difference between claim 1 and claim 20 is that claim 1 is generic to claim 20, claim 20 specifying that (1) the one “dynamic property” of claim 1 is, in claim 20, the load on the wheel assemblies, and (2) the “manipulation” of claim 1 affects the vehicle’s center of gravity in claim 20.

1. (Original) A method of controlling stability of a vehicle having an articulated suspension, comprising:	20. (Currently Amended) A method of controlling stability of a vehicle having an articulated suspension,
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<p>determining at least one dynamic property of the vehicle; and</p> <p>manipulating the articulated suspension based on the at least one dynamic property to affect the stability of the vehicle.</p>	<p>comprising:</p> <p>determining a load on each of a plurality of wheel assemblies of the articulated suspension; and</p> <p>manipulating at least one component of the vehicle to affect a center of gravity of the vehicle or the vehicle's stability limits.</p>
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The following table also establishes that Group II, represented by claim 38, and Group III, represented by claim 46, are also linked.

<p>38. (Currently Amended) A system for controlling stability of a vehicle having an articulated suspension, comprising:</p> <p><i>a plurality of sensors for sensing a state of the vehicle; and</i></p> <p><i>a controller coupled with the plurality of sensors and adapted to articulate at least one component of the vehicle to affect the vehicle's center of gravity or the vehicle's stability limits.</i></p>	<p>46. (Currently Amended) A vehicle, comprising:</p> <p>a chassis;</p> <p>at least one component articulable with respect to the chassis;</p> <p><i>a plurality of sensors for sensing a state of the vehicle; and</i></p> <p><i>a controller coupled with the plurality of sensors and adapted to articulate the at least one articulable component to affect the vehicle's center of gravity or the vehicle's stability limits.</i></p>
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Applicants note that there are numerous links among the dependent claims, as well. If the linking claims are allowed, the rest of their Groups must be rejoined for examination. M.P.E.P. §809. Accordingly, the restriction is improvident since most of the burden in examination will borne anyway if Office policy is correctly followed. M.P.E.P. §803.

B. THE CLAIMS ARE IMPROPERLY GROUPED

Applicants challenge the grouping of the claims. More particularly, Applicants respectfully submit that claims 38-45, in Group II, should more properly grouped with claims 46-

53 of Group III. Claims 20, 38, and 46 are set out side-by-side below for the convenience of the Office to facilitate the review. The emphasis shows the common limitations among the claims. As one can see, there are no common limitations between claims 20 and 38, but there are substantial common limitations between claims 38 and 46.

Group II	Group II	Group III
<p>20. (Currently Amended) <i>A method of controlling stability of a vehicle having an articulated suspension</i>, comprising:</p> <p>determining a load on each of a plurality of wheel assemblies of the articulated suspension; and</p> <p>manipulating at least one component of the vehicle to affect a center of gravity of the vehicle or the vehicle's stability limits.</p>	<p>38. (Currently Amended) <i>A system for controlling stability of a vehicle having an articulated suspension</i>, comprising:</p> <p><i>a plurality of sensors for sensing a state of the vehicle; and</i></p> <p><i>a controller coupled with the plurality of sensors and adapted to articulate at least one component of the vehicle to affect the vehicle's center of gravity or the vehicle's stability limits.</i></p>	<p>46. (Currently Amended) A vehicle, comprising:</p> <p>a chassis;</p> <p>at least one component articulable with respect to the chassis;</p> <p><i>a plurality of sensors for sensing a state of the vehicle; and</i></p> <p><i>a controller coupled with the plurality of sensors and adapted to articulate the at least one articulable component to affect the vehicle's center of gravity or the vehicle's stability limits.</i></p>

Applicants also challenge the groupings in that Groups I and II should be merged into the same group. The difference between claim 1 and claim 20 is that claim 1 is generic to claim 20, claim 20 specifying that (1) the one “dynamic property” of claim 1 is, in claim 20, the load on the wheel assemblies, and (2) the “manipulation” of claim 1 affects the vehicle’s center of gravity in claim 20. Accordingly, Applicants respectfully submit that Groups I and II should be merged.

1. (Original) A method of controlling stability of a	20. (Currently Amended) A method of controlling
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<p>vehicle having an articulated suspension, comprising:</p> <p>determining at least one dynamic property of the vehicle; and</p> <p>manipulating the articulated suspension based on the at least one dynamic property to affect the stability of the vehicle.</p>	<p>stability of a vehicle having an articulated suspension, comprising:</p> <p>determining a load on each of a plurality of wheel assemblies of the articulated suspension; and</p> <p>manipulating at least one component of the vehicle to affect a center of gravity of the vehicle or the vehicle's stability limits.</p>
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IV. CONCLUDING REMARKS

Applicants respectfully submit that all claims are in condition for allowance. This includes the independent linking claims, meaning the unelected groups must be rejoined and allowed.

The Examiner is invited to contact the undersigned attorney at (713) 934-4053 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

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